MiSE

Maritime Information Sharing Environment

Common Understanding Through Common Standards

NIEM-Maritime Exchange Model Summary

Consolidated Vessel Information and Security Reporting (CVISR)

Version 1.0 January 2015

About This Document

Information sharing is about implementing services to move and manage the information required to execute our missions. The implementation of an information exchange service requires a valid common exchange model *and* a defined process for requesting and providing the information.

The Exchange Model Summary document provides information about both the exchange model *and* the exchange process used within the Maritime Information Sharing Environment (MISE). Contained in this document are the artifacts used to develop and document the exchange model, an example sequence of user and system actions that are the sharing process, and descriptions of the associated data exchange elements.

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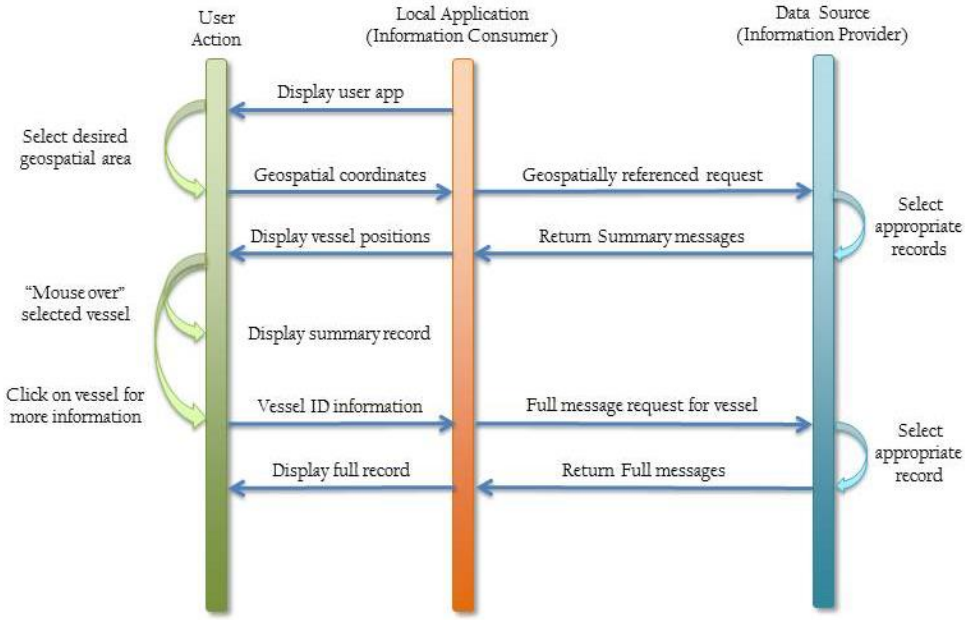
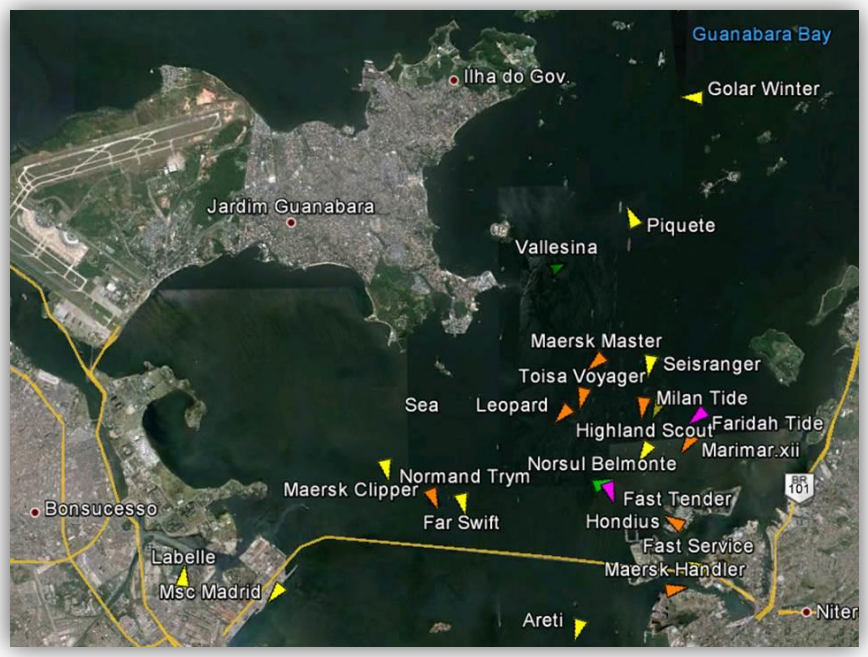
Information Exchange Sequence

An information sharing process can be as simple as a direct, single service that requires no interaction and does not change. However, frequently the exchange process includes user interaction. An understanding of that interaction and the associated data for each step is required before the exchange service can be established. This sequence diagram is an example of a process that could be used.

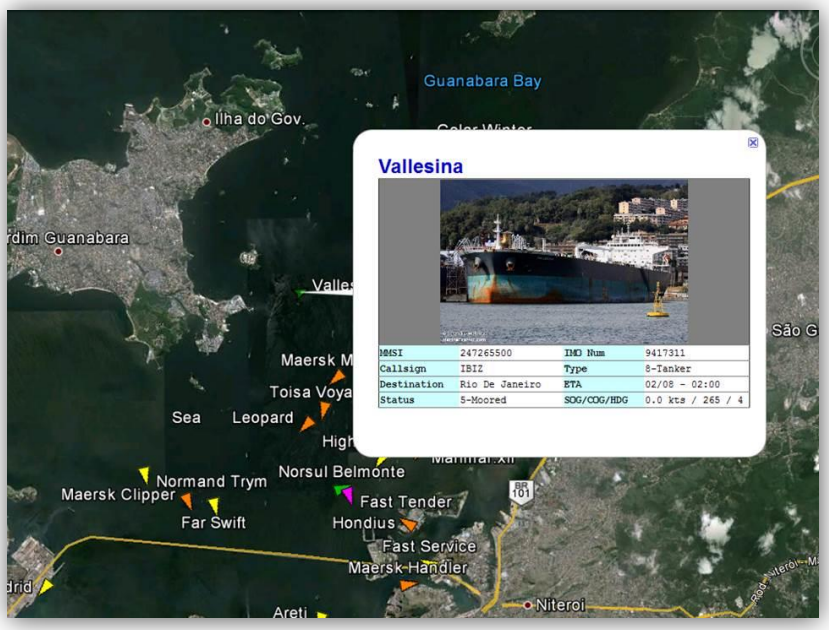


In this example, a user, using a local application, draws a box around a desired area on a geospatial display. The geospatially referenced request is sent from the information consumer to the information provider using an agreed upon request format. The returned message is a summary message for each of the vessels in the geospatial box.

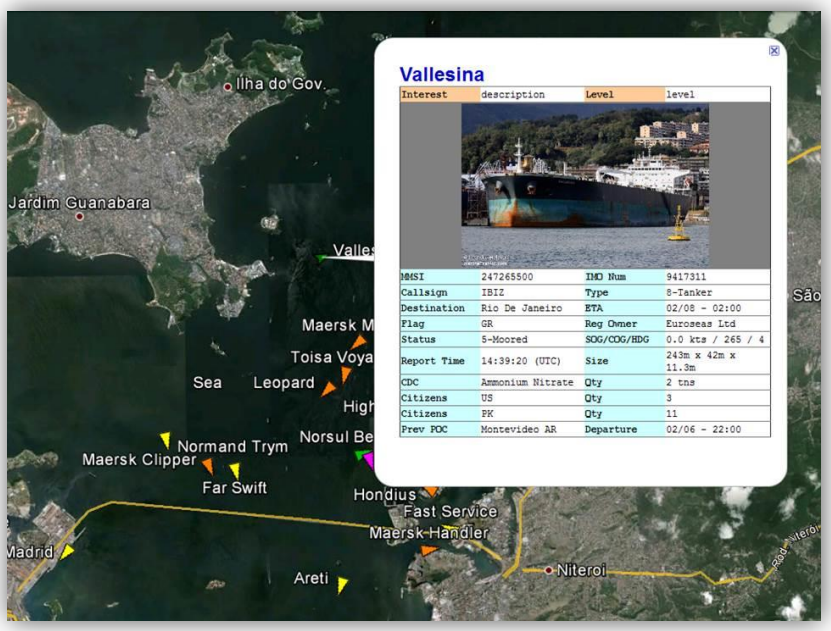
The returned information is displayed on the users application display.



If the user mouses over on a specific vessel, a "baseball card" of the summary information is displayed.



If the user clicks on a vessel, the vessel identification information is sent from the information consumer, via a previously defined request message format, to the information provider. The information service returns a full message for the vessel identified. The returned data set is received and displayed on the users application display.



This sequence depicts a possible process; many others could be defined. The important point is that a process *is* defined and agreed upon *before* the service is implemented.

Defining Exchange Models

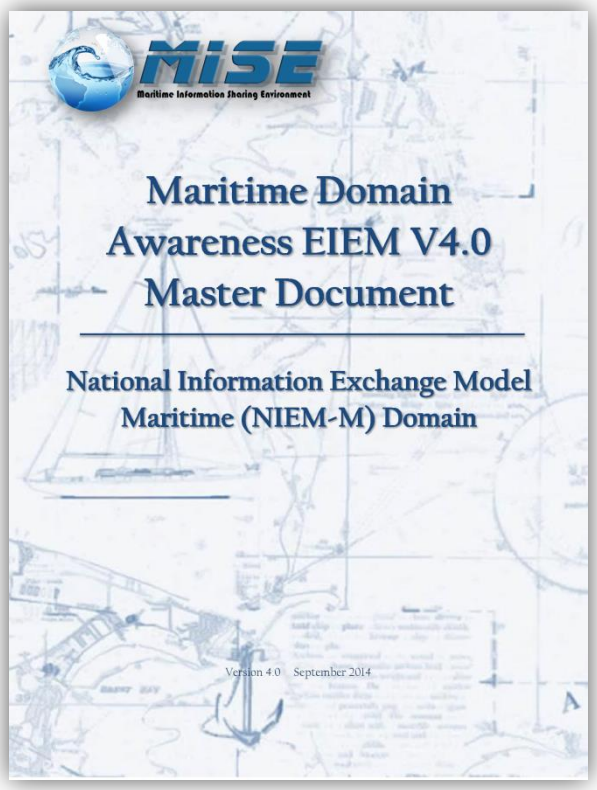
NIEM—the National Information Exchange Model—is a community-driven, standards-based approach to exchanging information and is used by the MISE to define maritime exchange models. NIEM is organized by communities, or Domains. The NIEM *Maritime* Domain (NIEM-M) is sponsored by an inter-agency Maritime Domain Awareness (MDA) Executive Steering Committee (MDA ESC).

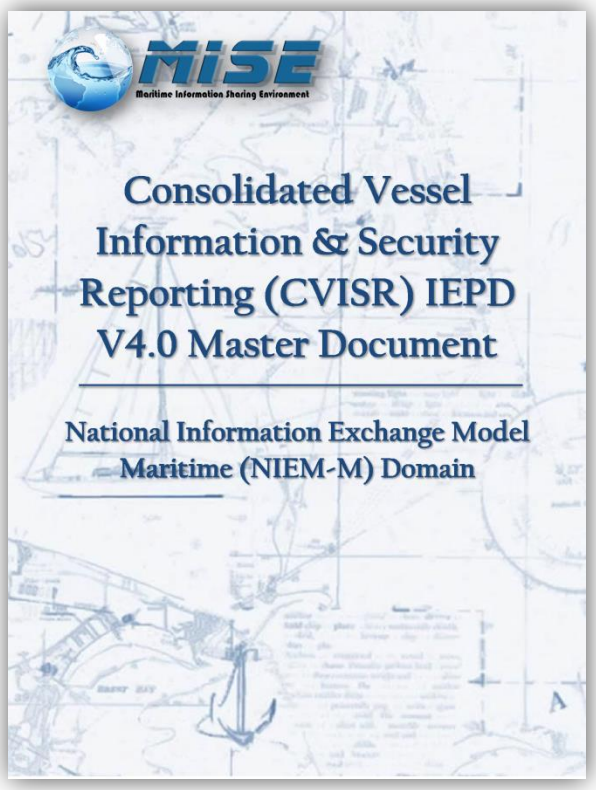
Within NIEM, there are several documents used to describe or define exchange models. One of those documents is the Information Exchange Package Documentation (IEPD).

IEPDs are a cornerstone document for MISE information exchanges. Each IEPD defines a specific exchange model or message. A unique IEPD called as Enterprise Information Exchange Model (EIEM) defines Basic Information Exchange Components (BIEC). BIECs are blocks of information that are common to multiple IEPDs.

The *Consolidated Vessel Information and Security Reporting* IEPD defines a CVISR message using the BIECs of; *CDC Cargo*, *Crew and Non-Crew Nationality Counts*, *Interest*, *Movement*, *Port Visit*, *Position*, *Vessel Characteristics*, *Vessel History Vessel Identification*, and *Voyage Information* from the Maritime EIEM and CVISR IEPD unique definition of *LOA Indicator*

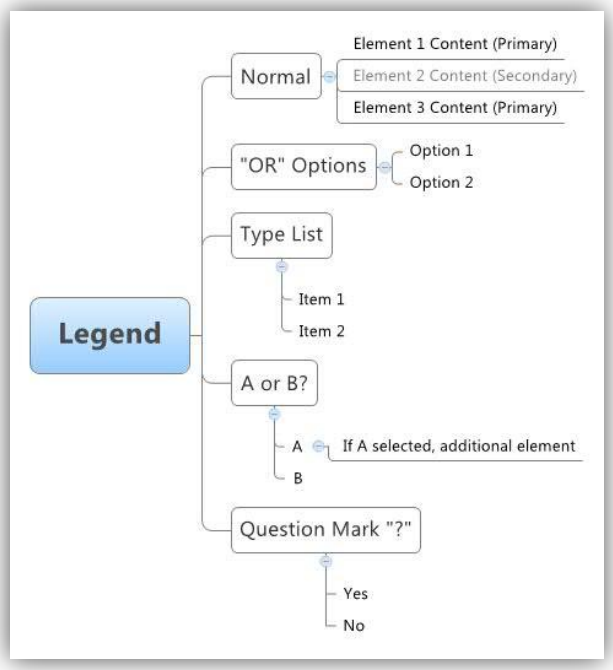
IEPD materials are accessible and downloadable at www.mda.gov.





Logical Model Diagrams

XML messages from the IEPDs can be confusing and difficult to understand for readers without a technical background. To better describe the components of an information exchange, graphical representations of the data elements associated with the exchange model have are provided. Below is a legend to use as a guide for the subsequent logical diagrams.



Normal - Data elements with sub-elements as branches that *contain* the data. Black sub-elements are "primary" and contained in both full and summary messages. Gray sub-elements are "secondary" and only contained in a full message.

"OR" Options - Data elements that identified the option to the user (e.g. search for vessel by position *OR* name). The option *contains* the data.

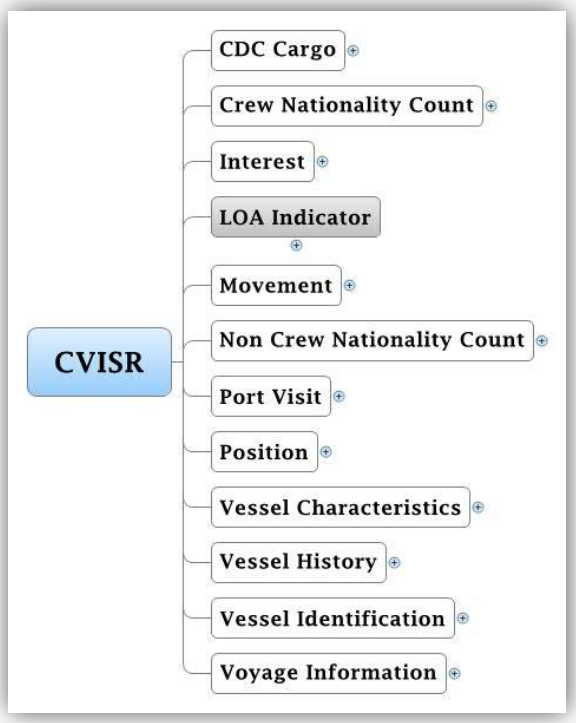
Type List - Data elements with a list of option choices. Unlike OR Options, the Type List choices *are* the data.

A or B? – Type Lists that asks user for additional information based upon the selection.

Question Mark (?) – Type Lists that are *only* yes or no answers.

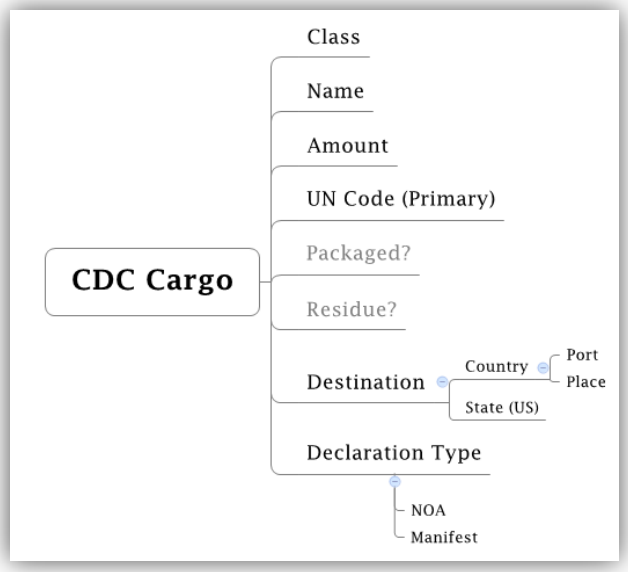
Exchange Model – Block Level

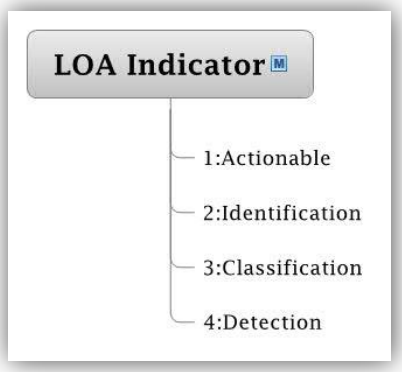
The logical data blocks for this IEPD are shown here. The blue block represents the IEPD, white blocks represent applicable BIECs and the grey block is only used in the CVISR IEPD.

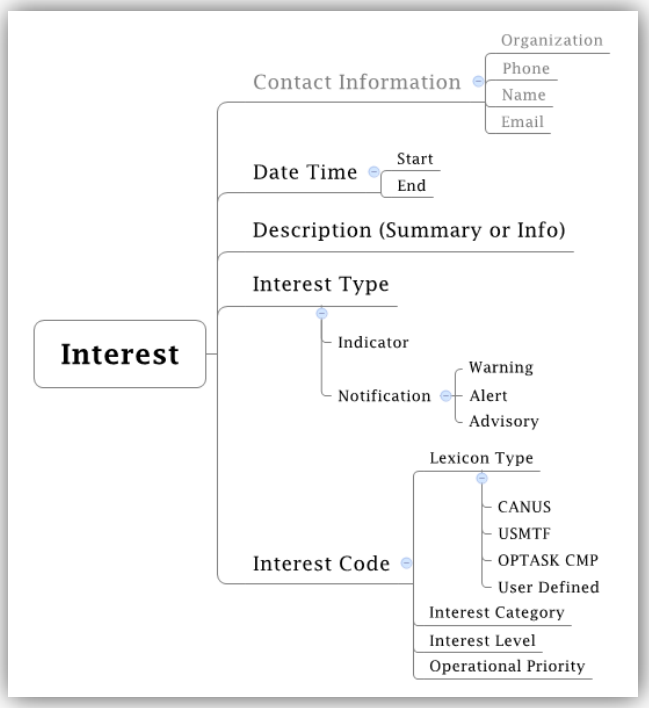


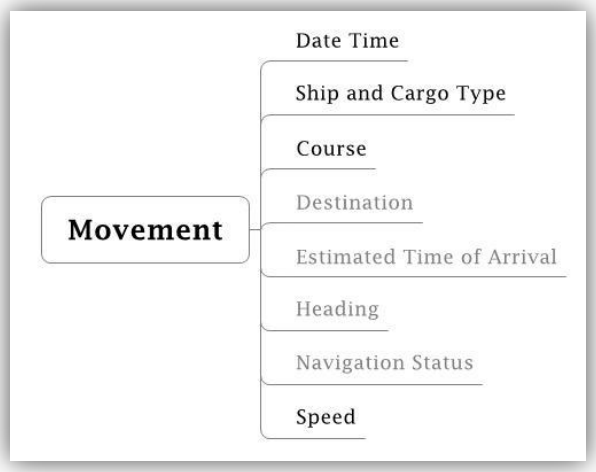
Logical Blocks

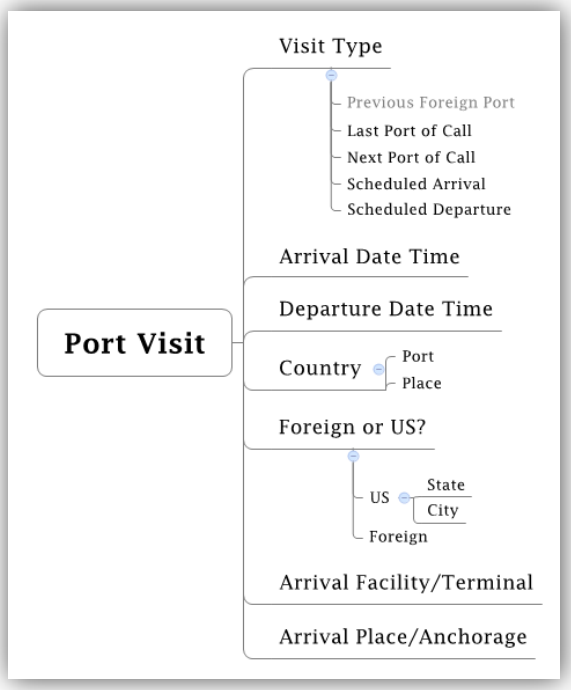
The data elements in each logical block are shown below.

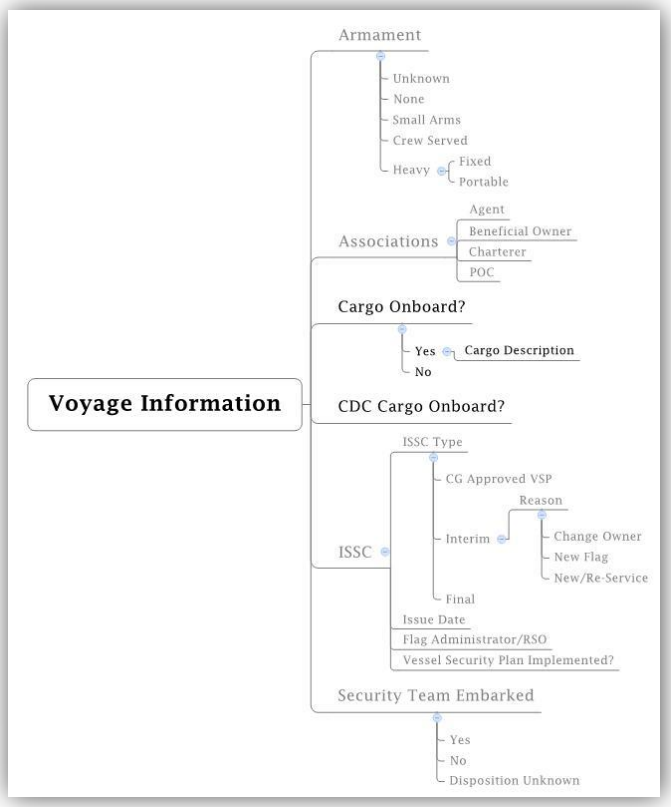




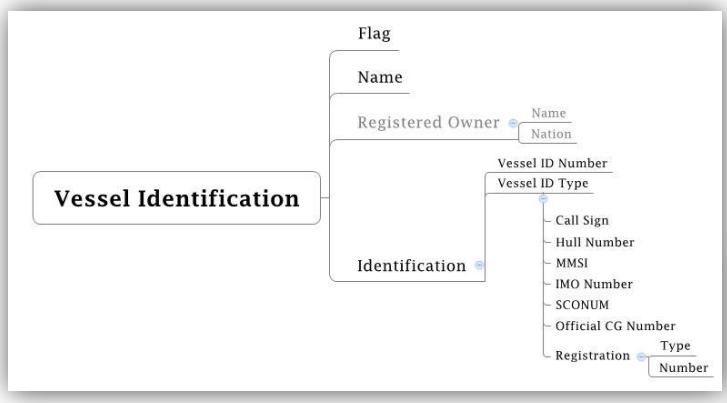


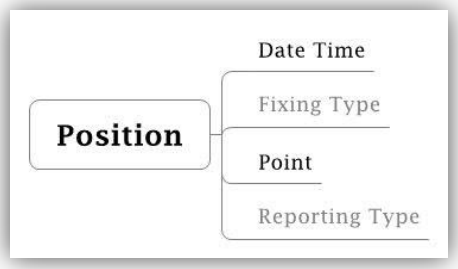



Port Visit
Visit Type
Previous Foreign Port
Last Port of Call
Next Port of Call
Scheduled Arrival
Scheduled Departure
Arrival Date Time
Departure Date Time
Country
Port
Place
Foreign or US?
US
State
City
Foreign
Arrival Facility/Terminal
Arrival Place/Anchorage


Voyage Information
Armament
Unknown
None
Small Arms
Crew Served
Heavy
Fixed
Portable
Associations
Agent
Beneficial Owner
Charterer
POC
Cargo Onboard?
Yes
Cargo Description
No
CDC Cargo Onboard?
ISSC
ISSC Type
CG Approved VSP
Interim
Reason
Change Owner
New Flag
New/Re-Service
Final
Issue Date
Flag Administrator/RSO
Vessel Security Plan Implemented?
Security Team Embarked
Yes
No
Disposition Unknown

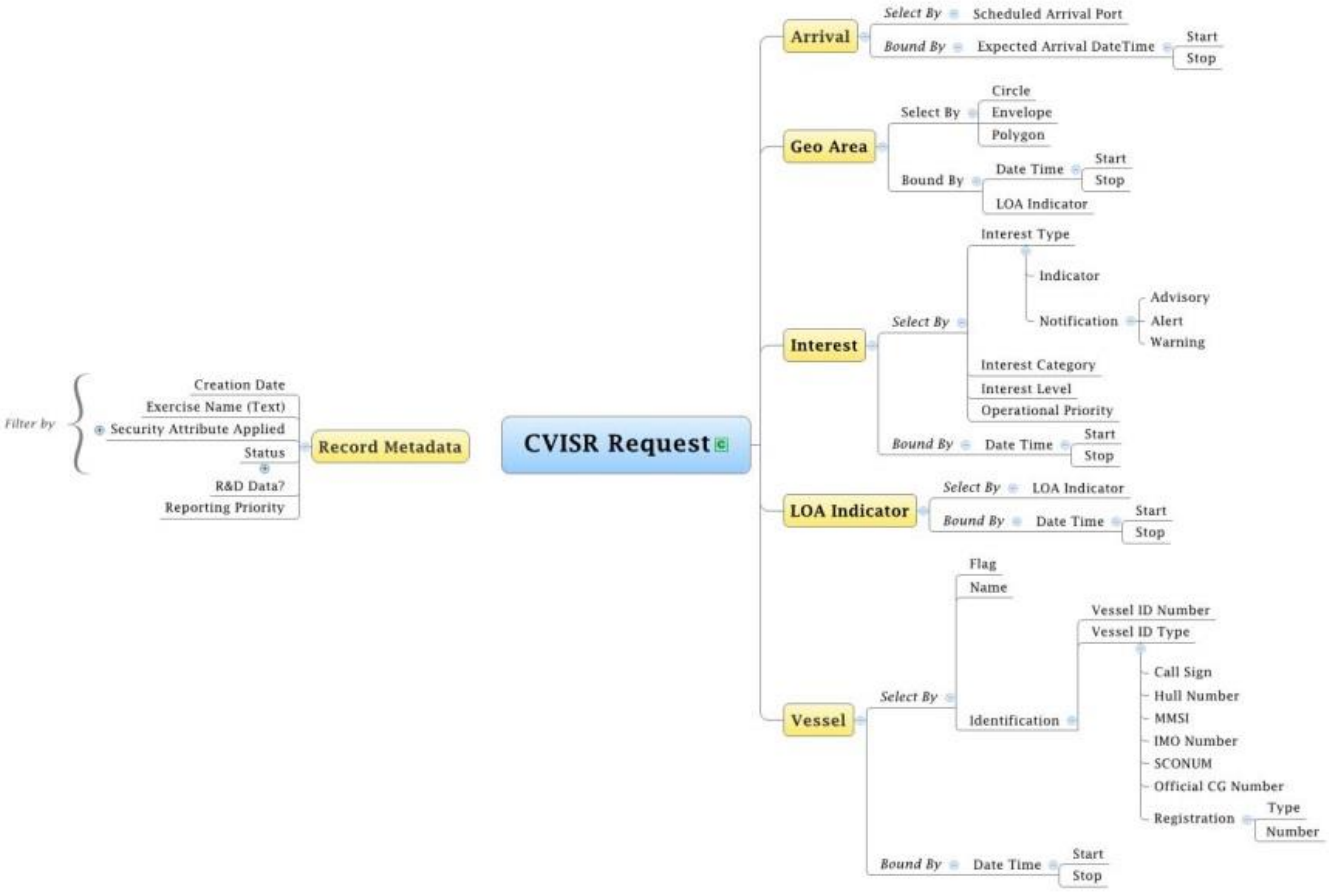
Vessel Characteristics
Beam
Classification
Type
Subtype
Classification Society
Deck Configuration
Double-Hull ?
Draft
Gross Tonnage
Ice Classification
Ice Classification Code
Ice Classification Type
International Maritime Organization (IMO)
International Association of Classification Societies (IACS)
American Bureau of Shipping
Finnish-Swedish
IACS Polar
Length
Picture URL
Propulsion Type
Speed
Cruising
Maximum





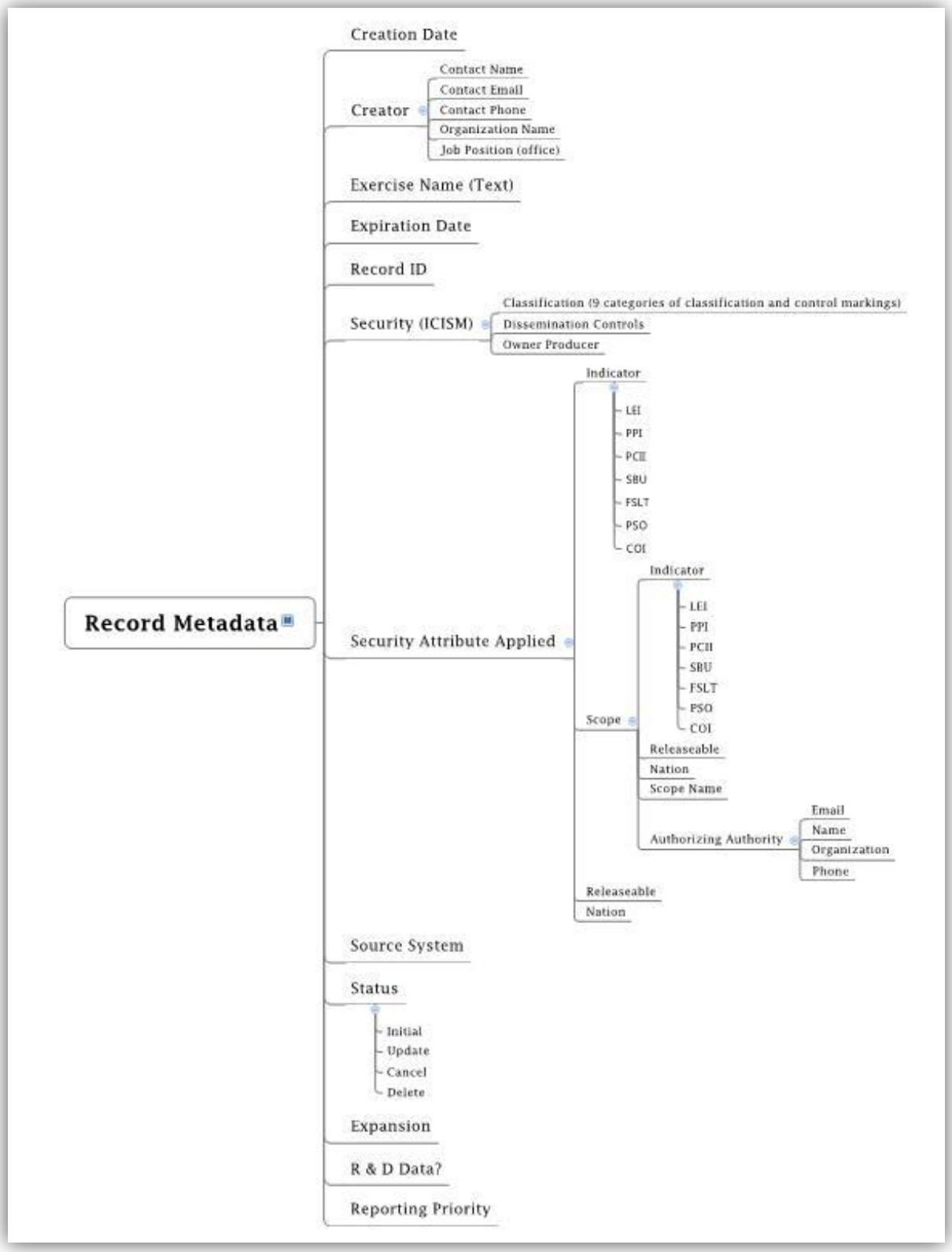
REQUEST/QUERY MODEL

Below is a graphical representation of the request/query model for position. The yellow blocks on the right side show the methods used to request position data. The yellow block on the left side shows the *Record Metadata* used to filter the resulting data.



Record Metadata

The record metadata shown below is used for managing the message throughout the exchange process.



Data Element Descriptions

The following tables contain descriptions for the data elements for each data block.

CDC Cargo

Common Name	Description
Class	DOT hazmat class for a dangerous cargo
Name	A name for the dangerous cargo
Amount	The amount of dangerous cargo
UN Code	The UN code identifying the type of dangerous cargo
Packaged?	Is the dangerous cargo is packaged?
Residue?	Is the dangerous cargo a residue?
Destination	Information about the cargo destination. Information includes: *Country* - Destination country of the cargo. Information includes: • *Port* - Destination port name • *Place* - Destination place name *State* - Destination state of the cargo (If U.S. bound)
Declaration Type	Type of declaration of the dangerous cargo. Types include: • NOA - Notice of Arrive • Manifest - Cargo Manifest

Crew Nationality Count

Common Name	Description
Nationality Code	The nationality of one or more crew members on board a vessel, represented as a three-letter code
Quantity	A number of crewmembers on board a vessel of a particular nationality

Interest

Common Name	Description
Contact Information	Contact information about party making the report. Information includes: *Organization* - Organization of reporting party *Name* - Name of reporting party *Email* - Email of reporting party *Phone* - Phone number of reporting party

Interest, continued

Common Name	Description
Date Time	Date and time an item of interest is in effect Information includes: *Start* - Start date when the item of interest is in effect *End* - End date when the item of interest is no longer in effect
Description	A description or summary of the item of interest
Interest Type	The type of interest report. Types include: • *Indicator* - Any piece of discrete data, processed or otherwise, that is used to inform or as part of an analytical process • *Notification* - A maritime event that may require action. Options include: o Warning - Notification of a possible activity or event o Alert - Directed communication of actual or eminent execution of an event o Advisory - Informational notification
Interest Code	Information about the type, definition and severity of the report. Information includes: *Lexicon Type* - Origination definition of the Interest code. Types include: • *CANUS* - Threat category from the April 2007 CANADA/USA Bi-National Vessel of Interest (VOI) Lexicon • *USMTF* - Threat category defined by USMTF • *OPTASK CMP* - Threat category defined by Navy OPTASK CMP • User Defined - Threat category defined by a specific user supporting a specific event or partner needs *Interest Category* – A code representing the interest category *Interest Level* – The level of interest in the event *Operational Priority* – Defines the level of reporting and interaction with event

LOA Indicator

Common Name	Description
Level of Awareness	A level of awareness that categorizes how much is known about a vessel at a point in time. The types or levels include: 1. *Actionable - Comprehensive* level of information 2. *Identification - Critical* level of information 3. *Classification - Elevated* level of information 4. *Detection* - Minimum level of information

MOVEMENT

Common Name	Description
Date Time	The date and time of the movement of a vessel
Ship Type	Type of vessel performing the movement
Cargo Type	Type of cargo reported by the vessel performing the movement
Course	Vessel course for this movement
Destination	Next port this vessel will arrive at as of this movement date time
Estimated time of Arrival (ETA)	The expected date and time a vessel will arrive at a next port
Heading	Vessel heading for this movement
Navigation Status	Vessel navigational status for this movement
Speed	Vessel speed of this movement

NON CREW NATIONALITY COUNT

Common Name	Description
Nationality Code	The nationality of one or more non-crew members on board a vessel, represented as a three-letter code
Quantity	A number of non-crewmembers on board a vessel of a particular nationality

PORT VISIT

Common Name	Description
Visit Type	Type of Port Visit. Types include: • Previous Foreign Port - The previous foreign ports of call • Last Port of Call - The last port of call • Next Port of Call - The next ports of call • Scheduled Call - Scheduled arrival at a port of call • Scheduled Departure - Scheduled departure from a port of call
Arrival Date Time	The actual date and time a vessel arrived at a port
Departure Date Time	The actual date and time a vessel departed from a port
Country	Name of the country of the port for the arrival or departure. Additional information include: • *Port* - Port name • *Place* - Place name

Port Visit, continued

Common Name	Description

Foreign or US?	Type of port? Types include:
	• U.S
	  ○ *City* - If yes, what city
	  ○ *State* - If yes, what state
	• Foreign

Arrival Facility/Terminal	A name of a facility that will receive a vessel while at port
Arrival Place/Anchorage	The anchorage a vessel will use while at port

POSITION

Common Name	Description
DateTime	The date and time of this position
Fixing Type	Type of fix for the position
Point	GML point representation for the position
Reporting Type	Type of position report

VESSEL CHARACTERISTICS

Common Name	Description
Beam	A measure of the beam (breadth) of a vessel
Classification	The vessel classification type and sub-type. Information includes: *Type* - The category or vessel class of a vessel • *Subtype* - The vessel sub-category or sub-class of a vessel
Classification Society	A name of a classification society for a vessel
Deck Configuration	A description of the deck configuration of a vessel
Double Hull?	Does the vessel have a double hull?
Draft	A measure of the current draft of a vessel
Gross Tonnage	The Gross Tonnage (GT) of a vessel

VESSEL HISTORY

Common Name	Description
Incident History	A summary of activities of note in which crew or passengers have participated.
Activity History	A summary of activities of note in which a vessel has participated
Violation History	A summary of illegal activities in which the vessel has participated
Of Interest History	A list of Interest elements that contain previous interest in this vessel

VESSEL IDENTIFICATION

Common Name	Description
Flag	The national flag under which a vessel sails
Name	The name of a vessel
Registered Owner	The entity that owns a vessel. Information includes: *Name* - The name of the person that owns a vessel *Nation* - The name of the nation that owns the vessel
Identification	Unique identification attributes of a vessel are: *Vessel ID Number* - The number of a vessel *Vessel ID Type* - Vessels can be identified by the following information: • Call Sign - The call sign for a vessel • Hull Number - The hull number of a vessel • MMSI - Maritime Mobile Service Identity (MMSI) of a vessel • IMO - Number The International Maritime Organization Number (IMO number) of a vessel • SCONUM - The Ship Control Number (SCONUM) of a vessel • Official CG Number - An official United States Coast Guard Number (USCG Official Number) of a vessel • Other Registration - Other registration information of the vessel o *Type* - Information about another, not otherwise specified registration for a vessel o *Number* - Registration number of a vessel

VOYAGE INFORMATION

Common Name	Description

Armament	The armament carried on a vessel during a voyage. Types include:
	• Unknown - Unknown, if any, onboard
	• None - No armaments onboard
	• Small Arms - Pistols and/or rifles
	• Crew Served - Mobile but not small arms (shoulder mounted)
	• Heavy - Choices include:
	  ○ Fixed - Non-mobile or permanently mounted
	  ○ Portable - Movable

Associations	Agencies, organizations or people associated with a voyage. Information includes: *Agent* - The entity acting as the agent for this voyage *Beneficial Owner* - The entity benefiting from this voyage *Charterer* - The entity chartering vessel for this voyage *POC* - Contact information for this voyage
Cargo Onboard	Whether vessel is carrying cargo. Choices include: • Yes/No ○ Cargo Description - If yes, The type of cargo carried on board this vessel during this voyage
CDC Cargo Onboard?	Whether the vessel is carrying hazardous or Certain Dangerous Cargo (CDC)

ISSC	International Ship Security Certificate. Information Includes:
	ISSC Type - The type of International Ship Security Certificate carried by the vessel. Types include:
	• C.G. Approved VSP - True if there is a coast guard approved vessel security plan for the voyage, false otherwise
	• Interim ISSC - A reason for the issuance of an interim ISSC. Types include:
	  ○ Change Owner
	  ○ New Flag
	  ○ New/Re-Service
	• Final - True if there is a final approved vessel security plan for the voyage, false otherwise
	Issue Date - A date of issue for an ISSC
	Flag Administrator/ RSO - The entity responsible for the security of the vessel as indicated by the ISSC
	Vessel Security Plan Implemented - A plan implemented to manage risks associated with the potential exploitation of small vessels by terrorists in America's maritime- its ports, shores, and waterways.

Voyage Information, continue

Common Name	Description
Security Team Embarked	Information on the disposition of the security team on a vessel. Choices include: • Yes/No • Disposition unknown

METADATA

Common Name	Description
Creation Date	A date a document was created
Creator	Entity primarily responsible for creating the content of the resource. Information includes: *Contact Name* - The name of a person who is the contact for the document creator *Contact Email* - An electronic mailing address by which the document creator may be contacted *Contact Phone* - A telephone number by which the document creator may be contacted *Organization Name* - The name of an organization who is the document creator *Job Position (Office)* - Brief description of a position
Exercise Name	Exercise name
Expiration Date	A date a transmitted document expires
Record ID	A unique ID identifying a record
ICISM Marking (Security)	Security classification of data. Information includes: *Classification* - A single indicator of the highest level of classification applicable to an information resource or portion within the domain of classified national security information *Dissemination Controls* - One or more indicators identifying the expansion or limitation on the distribution of information *Owner Producer* - One or more indicators identifying the national government or international organization that have purview over the classification marking of an information resource or portion therein

Metadata continued

Common Name	Description
Security Attributes Applied	Characteristics of a persona that defines a user in a particular role. Security Attributes include: *Indicator* - Indicates the security that must be applied to the record • Law Enforcement (LEI) • Privacy Protected (PPI) • Sensitive But Unclassified (SBU) • Protected Critical Infrastructure Information (PCII) • Federal/State/Local/Tribal/Territorial (FSLT) • Private Sector Only (PSO) • Community of Interest (COI) *Scope* - Indicates the security that must be applied to this record within the context of the named scope • Indicator – LEI, PPI, SBU, PCII, FSLT, PSO, COI • Releasable – Whether the data is releasable in the context of the names scope • Nation – The nations which the data can be released in the context of the named scope • Scope Name – Name of the scope in which the security and releasablity is modified • Authorizing Authority – Entity authorizing the use of the set of attached scope attributes on this metadata element. Includes the following information: o *Email* - The email of the authorizing authority o *Name* - The name of the authorizing authority o *Organization* - The organization of the authorizing authority o *Phone* - The phone number of the authorizing authority *Releasable* - Whether the data is releasable *Nation* - Nations allowed for release
Status	A status of a record that can be any of the following: *Initial* - New record *Update* - Change or update to an existing record *Cancel* - Cancelation of existing record *Delete* - Deletion of an existing record
Expansion	Additional information
Research and Development Data	True if the information in the record is for research and development , false otherwise
Reporting Priority	Numeric value representing how often this record is updated